

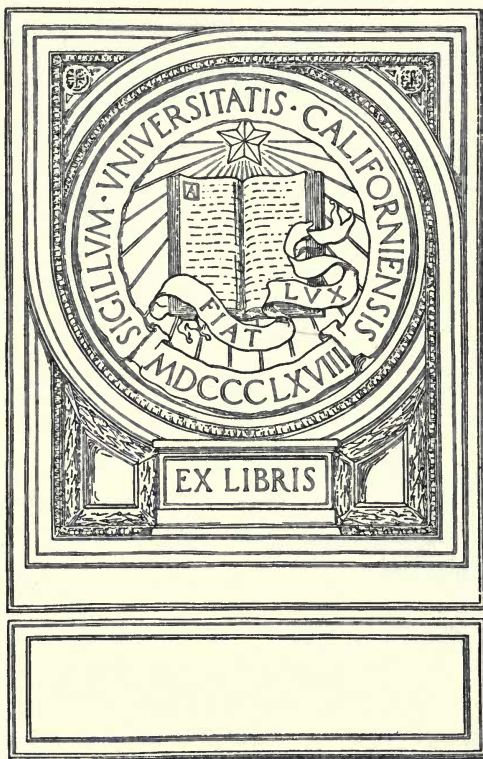
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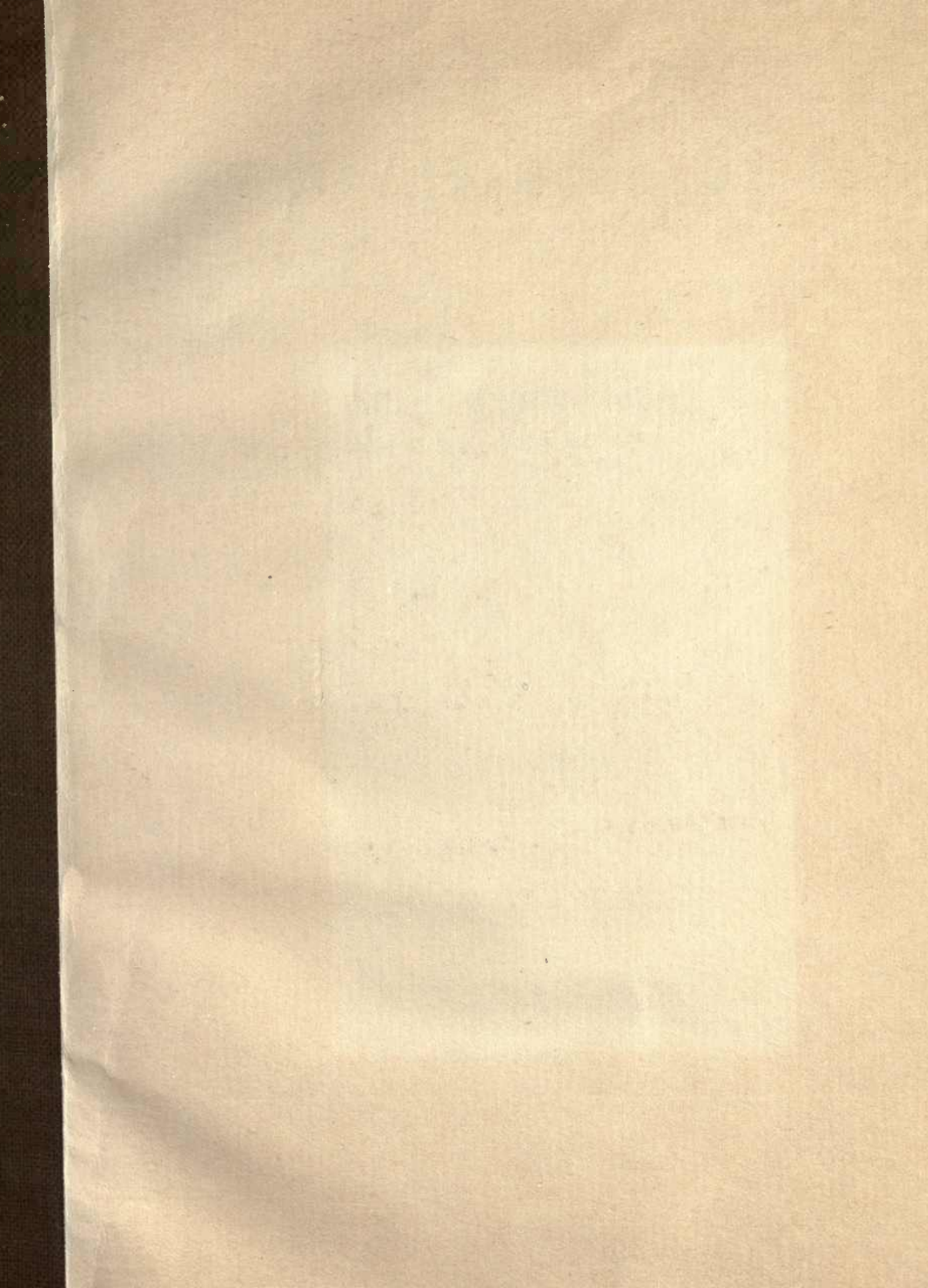
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# **Industrial Education**

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By

**Alfred Chatterton,**

Professor of Engineering on Special Duty  
and Officer in Charge of the School of Arts, Madras.

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## INDUSTRIAL EDUCATION.

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YOUR Secretary was kind enough to invite me to contribute to the proceedings of this conference a paper on technical education, but the term is such a vague one and in its widest and most accurate sense embraces such a vast field of educational labour that I felt compelled to ask permission to be allowed to limit the scope of my remarks to one phase of the question and even with the restrictions that I myself have imposed it seems hopeless in a single paper to try to put before you at all a clear view of the problems presented by industrial education in India. In Madras one set of solutions may be found practicable, in Bombay another, whilst in Bengal a third may be better suited to deal with the local situation. I therefore think that we shall be able to spend our time this afternoon more profitably and elicit a more practical discussion if I confine myself to the leading features of the problem as presented in our own Presidency, and though much of what I shall have to say may be applicable to other parts of India yet at the outset I should like to state that the case as I shall present it to you and the suggestions which I shall have to make are intended, in the first instance, to apply to the Madras Presidency and only so far as local conditions are similar to other parts of India. At the beginning of the twentieth century the industrial position of the Madras Presidency is one which it would be difficult to paint in roseate hues, yet it can hardly be considered very grave, and there are hopeful features about it which I am sanguine enough to think can be effectively developed if only a working plan can be devised and carried out on a scale adequate to the magnitude of the interests involved.

Just a hundred years ago the *Pax Britannica* was established and through the whole period since then law and order have prevailed and life and property have been secured. Population has increased at a marvellously rapid rate and long since the food supply would have proved insufficient but for the magnificent operations of the engineers both in the Irrigation and Railway branches of that profession. Millions of acres have been supplied



with fertilizing water and thousands of miles of railway provide means of transport. Seasons are no better, perhaps worse than formerly, but famines have been successfully met and conquered. There is still much hardship, much privation, and many unavoidable deaths when the rains fail, but millions are not swept away and whole districts are not depopulated. Steady progress has been made in developing the agricultural resources of the country and the area under cultivation is ever expanding, but the area of the land is limited and the opening up of new tracts is now becoming an increasingly difficult matter. Adverse seasons affect wider areas and agricultural distress, if less intense than formerly, is more widely diffused and occurs at more frequent intervals. To some the future appears full of difficulty but to others these difficulties wear a rather benign aspect as carrying with them their own solution. They will force us to a more energetic course of action which will result in the more extensive application of improved methods of cultivation, in the more careful conservancy of water and a more perfect utilization of the resources of the soil. The ryot has managed to maintain his position practising methods which are the result of the accumulated experience of a hundred generations,—valuable experience it is true but of very limited range and it requires no great amount of optimism to expect that if modern science and modern engineering skill are intelligently brought to his assistance, an improved condition of things will result which will indefinitely postpone the evil day.

The better education of the agricultural classes is a primary necessity if they are to be put into a position to avail themselves of improvements and the zamindars and big landholders must be taught to realize that their wealth and power and influence must be much more extensively devoted to the service of the people around them. The average ryot works on too small a scale and lacks the capital necessary for experiments and improvements, and it is to the wealthy classes, whose craving for the acquisition of land is well known, that we must look for pioneers in progress. Agriculture is the occupation of the great mass of the people, and is of such vast importance that it is entitled to be considered by itself when industrial matters are discussed. I have only alluded to it here because the main lines of advance are likely to be such



as can only be made when the ryot can reckon on being able to secure the assistance of artizans and artificers of a class that are now only to be found in large towns.

There are few who would dispute the statement that during the nineteenth century the condition of the agricultural population had, on the whole, materially improved, and that it was mainly due to enlightened expenditure on public works of all kinds, but chiefly on roads, railways and irrigation works. These increased facilities for communication and transport internally combined with a similar improvement in the methods of inter-oceanic traffic which have so much encouraged the export trade in raw materials have however given an equal impulse to the import trade in manufactured goods from the West, and these goods have gradually displaced indigenous manufactures and reduced the artizans of the country to a very impoverished condition. In Europe and America there has been a wonderful increase in manufacturing activity which is but faintly reflected in the cotton mills of Western India, the leather trade of Cawnpore, and the jute mills of Bengal. The bazaars of our towns and cities are full of imported wares, and year by year the tastes and needs of the people are becoming more and more Europeanized. The trade of the country is mainly in the hands of middlemen whose object is to export raw produce to the greatest extent possible and pay for it by importing manufactured goods. Obviously there is no other way—imports and exports must balance one another or the difference be paid for in specie or represent service of some kind; either administrative charges or interest on borrowed money.

The establishment of modern industrial undertakings requires co-operation on an extensive scale; except in a comparatively feeble way the natives of India do not place much faith in such commercial combinations, and it is only when the conditions are exceptionally favourable that capital flows freely from the West to the East. Consequently merchants in this country have found it easier and more profitable to be middlemen than manufacturers, and the whole of their energy and ability has been devoted to ousting the products of the indigenous artizan and driving him out of the trade that has been his livelihood and that of his family for many centuries. On a small scale it is true that something

has been done to encourage the production of art wares for sale in Europe and America, but the business, though it bulks largely in the papers, is really an absolutely insignificant one, and the attempts to make it expand have only resulted in a sad falling off in the quality of the works produced.

The cry has been raised that the old artistic industries of India have been killed, but I have recently had opportunities of observing that this is not so,—that they are only dormant, and that they flourish in a most unmistakeable manner when circumstances are favourable to their development. The matter is very important, and it is perhaps desirable that I should adduce evidence in support of this statement. In the North Western Provinces at the instance of the Viceroy and with the support of the late Lieutenant-Governor, Sir Antony MacDonnell, a good deal of money has been spent in restoring the magnificent remains of Mogul architecture. The work has been done in a most creditable manner, and the Lieutenant-Governor has quite recently remarked “It is noticeable that in all kinds of restorative work the Archæological Surveyor has tapped a vein of latent natural talent which has given excellent results. In fact the department has called into activity a school of artizans expert in this style of work. Many of them claim to be the descendants of the artificers who worked under the Emperors Akbar and Shahjahan.”

In Mysore the new palace now in course of construction in the Fort finds employment for more than one thousand of the most skilled stone carvers, metal workers and wood carvers to be found in India, and the work turned out by them is equal to anything to be found in the country. Again, what is perhaps well known to most of you, through the munificence of the Nattukottai Chettys the old Sivaite temples of Southern India are undergoing restoration. Many lakhs of rupees have been spent on the work which is being carried out in the old mediæval manner, and in all that has been done there are no signs of the deterioration so greatly deplored by those whose acquaintance with Indian art and art-workers is confined to curios in dealer’s shops and ladies’ drawing-rooms. In fact when good work is wanted it is always forthcoming, but unfortunately the demand for it is slight and fluctuating. The old native patrons have disappeared and any revival of



the old art industries resolves itself almost entirely into a question of finding new patrons. There is reason to believe that it would not be difficult to divert some small portion of the golden showers, under which art flourishes in the west, to revivify and stimulate into renewed activity the neglected and impoverished workers of India.

Some months ago I submitted a scheme for the consideration of those gentlemen who control the funds that have been raised to commemorate the Jubilee, and the Memory of Her late Imperial Majesty the Queen-Empress, but I have not heard that the very practical question of what they are going to do with the money has yet come before them. I hope presently to show that, with the very limited resources at their disposal, they cannot hope to launch with success any very grand project for developing technical education in this Presidency; but I think, and so do several other people whose opinion is more than ordinarily valuable, that the creation of an intermediate agency between the art workers and those who desire to possess their works and are willing to pay for them, would be an extremely useful and very practical way of assisting an interesting section of the community, whose supposed extinction or at any rate hopeless decadence has been somewhat prematurely mourned.

The persistence of hereditary skill through long periods adverse to its display is an interesting psychological phenomena and a factor which, I think, is of great importance in the general question of industrial education which we are now discussing. Assuming its existence, the rational procedure seems to be to afford as much encouragement as possible to its growth. If we are to have Schools of Art and of Art Industries, let them be places where the hereditary craftsmen congregate, where the talents of the more gifted are utilized to instruct the pupils and where every opportunity is given for latent sparks of genius to be fanned into flame. I would not absolutely restrict them to caste men, but I would not specially encourage the admission of outsiders as my experience, so far as it goes, is not favourable to the utility of giving or attempting to give an artistic training to every one who, from some accidental cause or other, finds it convenient to become a student of a School of Arts. Such an institution should

have for its object the production of works of art and that it may not be a burden on the community and that it may go on producing indefinitely; it is absolutely essential that it should be run on intelligent business lines. I do not think it is necessary to go to Europe for art instructors—South Kensington will do India very little good and may do much harm. The old art was very beautiful because it was of spontaneous growth—inevitably it must undergo change through the contact of West with East, but let the influence be gently and insensibly exercised. The result may be inharmonious and grotesque for a time, but sooner or later the natural genius will be produced who will found a school of art expressing naturally and simply the ideals of the people from whom he has sprung. Art can only really flourish when it meets with local recognition, and though, I think, it is quite possible to work up a not inconsiderable foreign demand for the products of Indian Art industries, yet it will be an unsatisfactory condition of things so long as it rests on such a basis. What is wanted more than anything is to educate our wealthy classes to a true appreciation of the worth of the artistic productions of their fellow countrymen—to an abhorrence of French mirrors, musical boxes, glass chandeliers and gilt gimcracks. We ought to have a permanent exhibition of native art industries in suitable surroundings, and it should be a place which should attract, and attracting, educate those people in this Presidency who are fortunate enough to be able to indulge in luxuries but who at present are filled with childish admiration for what is bright and glittering.

The example that has been set in Mysore is an excellent one, and it is to be hoped that, when the work is finished there, the art workers and artizans may find others wanting their services. Our educational system is sadly deficient in the way in which it completely and entirely ignores the influence of art and artistic surroundings, and I venture to suggest to the Victoria Jubilee and Memorial Committee that it is within their power to do not a little to remedy this evil if they will apply their funds to rendering better known the latent artistic skill which yet exists and which lies dormant simply for want of opportunity. It is ideas such as these that we are trying to give practical expression to in the School of Arts in Madras, and I am glad of the



opportunity of publicly explaining them because progress is necessarily very slow and because to the casual visitor the art work that is being done there is somewhat obscured by the prominence of certain purely industrial experiments which have been going on for some years past.

I have already briefly alluded to the way in which during the past century the indigenous industries of the country have been crushed by the competition of imports, and I must now ask you to consider with me how far by means of State institutions steps can be taken to remedy the existing state of things. The evils are fully recognised, and for the past 15 years a cry has arisen, constantly increasing in volume and intensity, for a State-aided system of Technical education to remedy them. In the words of Lord Curzon's address to the educational conference at Simla "Here in India there seems to be a general idea that in technical education will be found the regeneration of the country. Technical education is to resuscitate our native industries, to find for them new markets, and to recover old, to relieve agriculture, to develop the latent resources of the soil, to reduce the rush of our youths to literary courses and pursuits, to solve the economic problem and generally to revive a Saturnian age. The imagination has been struck by the alleged triumphs of Germany, and by the unquestionable enterprise of the youth of Japan." In Madras I think we must plead guilty to this indictment and to the fatuous folly, with 15 years' experience barren of all result, of still thinking that it is possible some *deus en machina* may arise who will with the meagre funds that have been raised to commemorate the life and reign of the late Queen-Empress, devise a scheme of Technical education which will introduce an era of industrial prosperity. That nothing has been done is not surprising, but it is surprising to find how many people still think that it is the fault of Government and the State Department of Education that the industries of the Presidency are not flourishing and that profitable employment has not been found for the congested population seeking a scanty and precarious livelihood on a barren soil.

What are our natural resources, out of what materials are industries to be created, have we neglected them, or is it the

poverty of our surroundings which prevents us from doing anything? Into a detailed reply to these questions it is impossible for me to enter, but broadly speaking the plains of the South of India may be described as a poor country—fertile where it is artificially watered but barren elsewhere. Its iron ores are its only mineral wealth and their tantalizing abundance is rendered of no avail by the absence of fuel. The climate enables existence to be dragged out on very little and the necessities of life are few and simple. Consequently labour is cheap and it is with this asset, and this only that we can hope to achieve anything. The artisans are intelligent, skilful and when properly instructed capable in well-organized factories of holding their own in some directions against the utmost efforts of machine producers. Nearly all the raw material they use has to be imported and the protection that they get in competition with imports due to the 5 per cent. duty and the cost of freight is practically very small. The weavers form the bulk of the artisan community but the workers in wood and metal are also very important. With the artisans of the building trades we need not concern ourselves as they suffer from no direct competition, and their prosperity is dependant entirely on the well-being of the whole community. These artisans belong to well-defined castes and their occupations are in the main hereditary, though the son of a blacksmith may become a carpenter or a coppersmith and *vice versâ*, but the son of a weaver is generally a weaver. It is difficult, if not impossible, for outsiders to become apprentices to these trades in the bazaars, and what is in reality a healthy trades union has prevented internal competition in the country from reducing the artisans to the level of the poorest agricultural population.

Such attempts at industrial education as have been made, and in what follows I must specially exclude the School of Arts which, from its foundation 50 years ago has occupied an altogether exceptional position, have had for their main object the training of people belonging to the non-artisan classes. The earliest schools were started by missionaries for the training of their protégées and they have met with a certain limited measure of success, but the total number of Native Christian artisans outside the special establishments of the Basel Mission is extremely small and is not



a factor of importance in the industrial position of the Presidency. Certain district boards and municipalities have devoted part of their funds to the advancement of industrial education, but the methods pursued have been extremely crude and the results incommensurate, except in one single case, with the expenditure that has been incurred. The usual procedure was as follows: A headmaster or Superintendent was appointed without any regard to his fitness for the position, but chiefly because he was willing to accept the modest pay offered him—pupils were gathered in from the highways and byeways by the offer of attractive scholarships. Maistries were appointed to teach certain trades, usually carpentry, blacksmith's work and rattan work. Efforts were made to get orders for work and the European and official element of the population appealed to for support. So far as I am aware no attempt was ever made until recently to train the boys in these industrial schools on work other than that required by Europeans—the huge native markets around them were entirely neglected and the schools languished for want of an outlet for their productions. It would serve no useful purpose to unduly dilate on the imperfections of these experiments in industrial education. They did not achieve the objects with which they were started, but they attracted attention to themselves and offered opportunities for experiment and enquiries and in that way some good has come from them.

The industrial school of the future has yet to be evolved but in Madras we have accepted, at any rate tentatively, certain general principles regarding their functions and the way they should be worked. The schools may be divided into three main classes: (1) Those established for the purpose of training boys as artizans who are not artizans by caste and who consequently have no opportunity of picking up a trade in any other way. The bulk of these schools will be of a sectarian character, such as the Anjuman Industrial School for Mahammadans or the various mission schools. They will follow along established lines and if efficiently conducted should supply a useful stimulus to the artizan classes by the introduction of an element of competition which should have a beneficial effect.

(2) Central industrial schools primarily intended for the benefit of the recognized industrial classes and working with the object of improving the industries of the country. These schools are never likely to be very numerous and they will be of necessity mainly in the hands of European experts. The object is not so much to train boys, though that of course will be done, as to provide a supplementary course of instruction to the training which artizans now receive in their own homes. In them a large amount of experimental work will always be in progress, new ideas will be tested, new processes tried, new tools brought to the notice of the trades and generally the endeavour will be made to foster private enterprise by help in any direction that may be feasible. There is no intention to gradually build them up into important manufacturing establishments, but they will be conducted on a scale just large enough to render them thoroughly efficient training institutions not only for workmen, but also for people who will afterwards become foremen and managers of works. With vested interests there is no intention that they should compete and the policy to be adopted in their management will be to bring them into as intimate association as possible with existing undertakings. Of necessity they must have a business side for the disposal of their outturn and that will be conducted on rational business principles having in view that the end and object of the schools is not a dividend on the capital invested in them but the promotion of the industrial prosperity of the country. The industrial side of the Madras School of Arts is at present the only representative of institution of this kind in India and so far its operations have been mainly confined to the establishment of a school of metal work which conducted on the lines I have indicated above has met with sufficient success to justify us in thinking that a development of the same policy in regard to other industries may be of great assistance to the struggling artizan communities. Into the details of the work that has been done in the past or that is contemplated in the future this is hardly a fitting occasion for me to enter, but those of you who are sufficiently interested in the matter may easily pursue your enquiries at the school where information can be freely obtained. It will suffice to say that, during next year, I hope to be able to



develop the weaving section that has been recently started. From the experimental work that has been done and is now in progress, it is evident that there is great room for expert assistance, but whether we shall be able to materially improve the condition of the great weaving population of India is a matter which is influenced by so many and such very complex factors entirely beyond our control that it is only the very urgent necessity for doing something that has led us to contemplate attacking such a series of difficult problems.

(3) The third class of schools will be to a large extent offshoots of the second. It is not desirable that we should set up as has hitherto been done industrial schools to teach what is already taught in the bazaars, but there are many places where industrial knowledge and skill in certain trades is in a backward condition, and it is important that the artisans should everywhere be taught to work on the most advantageous lines and that the most should be made of their cheap labour. The Central industrial schools can only come into contact with a comparatively small number of artisans and when by experience it is ascertained that in any branch of industry a feasible improvement has been effected, branch institutions are required to diffuse the knowledge among all who are affected thereby. A typical school of this class exists at Madura and is maintained by the district board in a very efficient condition. The superintendence and management of these schools should invariably be in native hands, and it will be one of the functions of the Central schools to train the science graduates of the University and the passed pupils of the Higher Technical colleges and schools, so that they may be able to undertake this work.

The cost of establishing these schools will be considerable as they will have to be provided with workshops and equipped with good machinery to assist and supplement hand labour. The scale on which they will operate will be as small as is compatible with the attainment of the end for which they will be started. Yet the turn over must in all cases be considerable and the working expenses fairly heavy as it will only be in exceptional cases and for short periods that the schools will be able even with the most skilful management to fully pay their way. The majority

of these schools will only deal with one industry or with one associated group of industries, so that their whole resources may be concentrated on a definite object and not, as has hitherto been the cases, frittered away in attempting to deal with too much. There are many questions connected with the organization and management of these schools which have been the subject of much discussion and it is not, I think, advisable that any hard and fast rules should be drawn up to deal with them. It is essential at any rate for the present that the schools should have as elastic a constitution as is consistent with proper control and that each should be placed in a position, so that its superintendent may take full advantage of any favourable local circumstances that may arise. The most essential requisite is that they should be looked up to by the artizan community throughout the country as places where work is being visibly carried on for their benefit, and the measure of success which they achieve should be largely gauged by the voluntary support which they receive from the working classes. So long as the attendance of pupils can only be secured by the grant of stipends and scholarships, so long we may take it for granted that they are not supplying a recognized want in a way which is useful to those for whose benefit the institutions have been started. The artizans, however, are very poor and it is obvious that they must earn sufficient to enable them to live, and the gradual abolition of scholarships should be accompanied by the introduction of a system of paying wages, which wages should represent the actual value of the labour expended. It is not young children so much as young workmen that the schools should attract and the instruction and practice in trade operations which the schools must supply should be such as to give the pupils valuable experience which will readily find a market.

The question as to the best means of disposing of the finished productions of these schools is not such a serious one as is generally supposed since the main objection which has been raised—interference with private trade—will be easily avoided if the fundamental principles which have hitherto guided our work are strictly adhered to. The object of these schools is to create new industries, to improve old ones, to extend the range of industrial



operations and indicate the possibilities of new markets. Importers of foreign manufactures may suffer but it is to be hoped that the creation of an export trade in hand manufactures may compensate them for any loss they may sustain, and it is certain that if the mercantile community can be brought to see the possibilities of export business and will proceed to develop them with the same energy and ability that has been displayed in their business operations in the past, there will be result an immense improvement in the industrial condition of the country.

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